

SEQUENCE LISTING

<110> Choi

<120> Staphylococcus aureus Polynucleotides and Polypeptides

<130> PB560

<150> PCT/US00/23773

<151> 2000-08-31

<150> US 60/151,933

<151> 1999-09-01

<150> US 08/781,986

<151> 1997-01-03

<150> US 08/956,171

<151> 1997-10-20

<150> US 60/009,861

<151> 1996-01-06

<160> 74

<170> PatentIn Ver. 2.0

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<213> Homo sapiens

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Ile Ile Asp Gln Tyr Thr Ser Val Ala Val Thr Gly Ala His Gly Lys
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Tyr Lys Pro Asp Tyr Ala Ile Met Thr Asn Ile Asp Phe Asp His Pro
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Asp Tyr Phe Lys Asp Ile Asn Asp Val Phe Asp Ala Phe Gln Glu Met
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Thr Ala Phe Asp Val Tyr Val Asp Gly Glu Phe Tyr Asp His Phe Leu
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Ser Pro Gln Tyr Gly Asp His Thr Val Leu Asn Ala Leu Ala Val Ile
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Leu Glu Thr Phe Gly Gly Val Lys Arg Arg Phe Asn Glu Thr Thr Ile
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Ala Asn Gln Val Ile Val Asp Asp Tyr Ala His His Pro Arg Glu Ile

009653 00101

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 Val Ile Arg Ile Ala Val Pro Ala Leu Thr Glu Glu Arg Arg Lys Glu
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 Arg Val Lys Asp Val Lys Lys Ile Gly Glu Glu Ala Lys Val Ser Val
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 Asn Gly Asp Ile Thr Glu Asp Glu Leu Arg Ser Gly Thr Glu Asp Val
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Asp Lys Glu Lys Asp Ile Met Ser Val
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<213> Homo sapiens

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Glu Glu Glu Thr Gln Val Lys Asp Gly Lys Ala Lys Thr Thr Val Lys
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Lys Thr Phe Pro Gly Tyr Val Leu Val Glu Leu Ile Met Thr Asp Glu
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Ser Trp Tyr Val Val Arg Asn Thr Pro Gly Val Thr Gly Phe Val Gly
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Ser Ala Gly Ala Gly Ser Lys Pro Asn Pro Leu Leu Pro Glu Glu Val
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Arg Phe Ile Leu Lys Gln Met Gly Leu Lys Glu Lys Thr Ile Asp Val
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Glu Leu Glu Val Gly Glu Gln Val Arg Ile Lys Ser Gly Pro Phe Ala
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Asn Gln Val Gly Glu Val Gln Glu Ile Glu Thr Asp Lys Phe Lys Leu
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<213> Homo sapiens

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Lys Asn Tyr Val Gln Ser His Ser Phe Ile Lys Ser Leu Val Leu Gly
      35             40             45

Ile Ser Gly Gly Gln Asp Ser Thr Leu Val Gly Lys Leu Val Gln Met
      50             55             60

Ser Val Asn Glu Leu Arg Glu Glu Gly Ile Asp Cys Thr Phe Ile Ala
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Val Lys Leu Pro Tyr Gly Val Gln Lys Asp Ala Asp Glu Val Glu Gln
      85             90             95

Ala Leu Arg Phe Ile Glu Pro Asp Glu Ile Val Thr Val Asn Ile Lys
      100            105            110

Pro Ala Val Asp Gln Ser Val Gln Ser Leu Lys Glu Ala Gly Ile Val
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Leu Thr Asp Phe Gln Lys Gly Asn Glu Lys Ala Arg Glu Arg Met Lys
      130            135            140

Val Gln Phe Ser Ile Ala Ser Asn Arg Gln Gly Ile Val Val Gly Thr
      145            150            155            160

Asp His Ser Ala Glu Asn Ile Thr Gly Phe Tyr Thr Lys Tyr Gly Asp
      165            170            175

Gly Ala Ala Asp Ile Ala Pro Ile Phe Gly Leu Asn Lys Arg Gln Gly
      180            185            190
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Arg Gln Leu Leu Ala Tyr Leu Gly Ala Pro Lys Glu Leu Tyr Glu Lys
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Thr Pro Thr Ala Asp Leu Glu Asp Asp Lys Pro Gln Leu Pro Asp Glu
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Asp Ala Leu Gly Val Thr Tyr Glu Ala Ile Asp Asn Tyr Leu Glu Gly
225 230 235 240

Lys Pro Val Thr Pro Glu Glu Gln Lys Val Ile Glu Asn His Tyr Ile
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Arg Asn Ala His Lys Arg Glu Leu Ala Tyr Thr Arg Tyr Thr Trp Pro
260 265 270

Lys Ser

<210> 13
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<212> DNA
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35 40 45

Glu Val Glu Asn Phe Pro Gly Phe Glu Met Ile Thr Gly Pro Asp Leu
50 55 60

Ser Thr Lys Met Phe Glu His Ala Lys Lys Phe Gly Ala Val Tyr Gln
 65 70 75 80
 Tyr Gly Asp Ile Lys Ser Val Glu Asp Lys Gly Glu Tyr Lys Val Ile
 85 90 95
 Asn Phe Gly Asn Lys Glu Leu Thr Ala Lys Ala Val Ile Ile Ala Thr
 100 105 110
 Gly Ala Glu Tyr Lys Lys Ile Gly Val Pro Gly Glu Gln Glu Leu Gly
 115 120 125
 Gly Arg Gly Val Ser Tyr Cys Ala Val Cys Asp Gly Ala Phe Phe Lys
 130 135 140
 Asn Lys Arg Leu Phe Val Ile Gly Gly Gly Asp Ser Ala Val Glu Glu
 145 150 155 160
 Gly Thr Phe Leu Thr Lys Phe Ala Asp Lys Val Thr Ile Val His Arg
 165 170 175
 Arg Asp Glu Leu Arg Ala Gln Arg Ile Leu Gln Asp Arg Ala Phe Lys
 180 185 190
 Asn Asp Lys Ile Asp Phe Ile Trp Ser His Thr Leu Lys Ser Ile Asn
 195 200 205
 Glu Lys Asp Gly Lys Val Gly Ser Val Thr Leu Thr Ser Thr Lys Asp
 210 215 220
 Gly Ser Glu Glu Thr His Glu Ala Asp Gly Val Phe Ile Tyr Ile Gly
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 Met Lys Pro Leu Thr Ala Pro Phe Lys Asp Leu Gly Ile Thr Asn Asp
 245 250 255
 Val Gly Tyr Ile Val Thr Lys Asp Asp Met Thr Thr Ser Val Pro Gly
 260 265 270
 Ile Phe Ala Ala Gly Asp Val Arg Asp Lys Gly Leu Arg Gln Ile Val
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<210> 16

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<212> PRT

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<400> 16

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Tyr Val Leu Ala His Asn Lys Gly Glu Lys His Pro Arg Val Leu Val
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Gly Arg Asp Thr Arg Val Ser Gly Glu Met Leu Glu Ser Ala Leu Ile
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Ala Gly Leu Ile Ser Ile Gly Ala Glu Val Met Arg Leu Gly Ile Ile
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Ser Thr Pro Gly Val Ala Tyr Leu Thr Arg Asp Met Gly Ala Glu Leu
      85                      90                      95

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```

Gly Val Met Ile Ser Ala Ser His Asn Pro Val Ala Asp Asn Gly Ile
      100                      105                      110

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Lys Phe Phe Gly Ser Asp Gly Phe Lys Leu Ser Asp Glu Gln Glu Asn
      115                      120                      125

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Glu Ile Glu Ala Leu Leu Asp Gln Glu Asn Pro Glu Leu Pro Arg Pro
      130                      135                      140

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```

Val Gly Asn Asp Ile Val His Tyr Ser Asp Tyr Phe Glu Gly Ala Gln
      145                      150                      155                      160

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```

Lys Tyr Leu Ser Tyr Leu Lys Ser Thr Val Asp Val Asn Phe Glu Gly
      165                      170                      175

```

```

Leu Lys Ile Ala Leu Asp Gly Ala Asn Gly Ser Thr Ser Ser Leu Ala
      180                      185                      190

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Pro Phe Leu Phe Gly Asp Leu Glu Ala Asp Thr Glu Thr Ile Gly Cys
 195 200 205

Ser Pro Asp Gly Tyr Asn Ile Asn Glu Lys Cys Gly Ser Thr His Pro
 210 215 220

Glu Lys Leu Ala Glu Lys Val Val Glu Thr Glu Ser Asp Phe Gly Leu
 225 230 235 240

Ala Phe Asp Gly Asp Gly Asp Arg Ile Ile Ala Val Asp Glu Asn Gly
 245 250 255

Gln Ile Val Asp Gly Asp Gln Ile Met Phe Ile Ile Gly Gln Glu Met
 260 265 270

His Lys Asn Gln Glu Leu Asn Asn Asp Met Ile Val Ser Thr Val Met
 275 280 285

Ser Asn Leu Gly Phe Tyr Lys Ala Leu Glu Gln Glu Gly Ile Lys Ser
 290 295 300

Asn Lys Thr Lys Val Gly Asp Arg Tyr Val Val Glu Glu Met Arg Arg
 305 310 315 320

Gly Asn Tyr Asn Leu Gly Gly Glu Gln Ser Gly His Ile Val Met Met
 325 330 335

Asp Tyr Asn Thr Thr Gly Asp Gly Leu Leu Thr Gly Ile Gln Leu Ala
 340 345 350

Ser Val Ile Lys Met Thr Gly Lys Ser Leu Ser Glu Leu Ala Gly Gln
 355 360 365

Met Lys Lys Tyr Pro Gln Ser Leu Ile Asn Val Arg Val Thr Asp Lys
 370 375 380

Tyr Arg Val Glu Glu Asn Val Asp Val Lys Glu Val Met Thr Lys Val
 385 390 395 400

Glu Val Glu Met Asn Gly Glu Gly Arg Ile Leu Val Arg Pro Ser Gly
 405 410 415

Thr Glu Pro Leu Val Arg Val Met Val Glu Ala Ala Thr Asp Glu Asp
 420 425 430

Ala Glu Arg Phe Ala Gln Gln Ile Ala Asp Val Val Gln Asp Lys Met
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Gly Leu Asp Lys
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<210> 17

<211> 1359

<212> DNA

<213> Homo sapiens

<400> 17

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agtgtaaaaag gacatttagg cgagcgttct ttatacagtt ttcaagagga acaactcggg 240
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<210> 18
 <211> 453
 <212> PRT
 <213> Homo sapiens

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 Lys Pro Met Val Glu His Val Leu Glu Ser Val Lys Gly Ser Gly Val
 35 40 45
 Asp Gln Val Val Thr Ile Val Gly His Gly Ala Glu Ser Val Lys Gly
 50 55 60
 His Leu Gly Glu Arg Ser Leu Tyr Ser Phe Gln Glu Glu Gln Leu Gly
 65 70 75 80
 Thr Ala His Ala Val Gln Met Ala Lys Ser His Leu Glu Asp Lys Glu
 85 90 95
 Gly Thr Thr Ile Val Val Cys Gly Asp Thr Pro Leu Ile Thr Lys Glu
 100 105 110
 Thr Leu Val Thr Leu Ile Ala His His Glu Asp Ala Asn Ala Gln Ala
 115 120 125
 Thr Val Leu Ser Ala Ser Ile Gln Gln Pro Tyr Gly Tyr Gly Arg Ile
 130 135 140
 Val Arg Asn Ala Ser Gly Arg Leu Glu Arg Ile Val Glu Glu Lys Asp
 145 150 155 160
 Ala Thr Gln Ala Glu Lys Asp Ile Asn Glu Ile Ser Ser Gly Ile Phe

165								170				175				
Ala	Phe	Asn	Asn	Lys	Thr	Leu	Phe	Glu	Lys	Leu	Thr	Gln	Val	Lys	Asn	
			180					185					190			
Asp	Asn	Ala	Gln	Gly	Glu	Tyr	Tyr	Leu	Pro	Asp	Val	Leu	Ser	Leu	Ile	
		195					200					205				
Leu	Asn	Asp	Gly	Gly	Ile	Val	Glu	Val	Tyr	Arg	Thr	Asn	Asp	Val	Glu	
		210					215					220				
Glu	Ile	Met	Gly	Val	Asn	Asp	Arg	Val	Met	Leu	Ser	Gln	Ala	Glu	Lys	
225					230					235					240	
Ala	Met	Gln	Arg	Arg	Thr	Asn	His	Tyr	His	Met	Leu	Asn	Gly	Val	Thr	
			245						250					255		
Ile	Ile	Asp	Pro	Asp	Ser	Thr	Tyr	Ile	Gly	Pro	Asp	Val	Thr	Ile	Gly	
			260					265					270			
Ser	Asp	Thr	Val	Ile	Glu	Pro	Gly	Val	Arg	Ile	Asn	Gly	Arg	Thr	Glu	
		275					280					285				
Ile	Gly	Glu	Asp	Val	Val	Ile	Gly	Gln	Tyr	Ser	Glu	Ile	Asn	Asn	Ser	
		290					295					300				
Thr	Ile	Glu	Asn	Gly	Ala	Cys	Ile	Gln	Gln	Ser	Val	Val	Asn	Asp	Ala	
305					310					315					320	
Ser	Val	Gly	Ala	Asn	Thr	Lys	Val	Gly	Pro	Phe	Ala	Gln	Leu	Arg	Pro	
			325						330					335		
Gly	Ala	Gln	Leu	Gly	Ala	Asp	Val	Lys	Val	Gly	Asn	Phe	Val	Glu	Ile	
			340					345					350			
Lys	Lys	Ala	Asp	Leu	Lys	Asp	Gly	Ala	Lys	Val	Ser	His	Leu	Ser	Tyr	
		355					360					365				
Ile	Gly	Asp	Ala	Val	Ile	Gly	Glu	Arg	Thr	Asn	Ile	Gly	Cys	Gly	Thr	
		370					375					380				
Ile	Thr	Val	Asn	Tyr	Asp	Gly	Glu	Asn	Lys	Phe	Lys	Thr	Ile	Val	Gly	
385					390					395					400	
Lys	Asp	Ser	Phe	Val	Gly	Cys	Asn	Val	Asn	Leu	Val	Ala	Pro	Val	Thr	
			405						410					415		
Ile	Gly	Asp	Asp	Val	Leu	Val	Ala	Ala	Gly	Ser	Thr	Ile	Thr	Asp	Asp	
			420					425					430			
Val	Pro	Asn	Asp	Ser	Leu	Ala	Val	Ala	Arg	Ala	Arg	Gln	Thr	Thr	Lys	
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<210> 19
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<212> DNA

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Leu	Ile	His	Arg	Ser	Asp	Lys	Ile	Asn	Lys	Leu	Met	Asp	Ala	Asp	Met
			180					185					190		
Asn	Gln	Pro	Ile	Leu	Asp	Glu	Leu	Asp	Lys	Arg	Glu	Ile	Pro	Tyr	Arg
		195					200					205			
Leu	Asn	Glu	Glu	Ile	Asn	Ala	Ile	Asn	Gly	Asn	Glu	Ile	Thr	Phe	Lys
	210					215					220				
Ser	Gly	Lys	Val	Glu	His	Tyr	Asp	Met	Ile	Ile	Glu	Gly	Val	Gly	Thr
225					230					235					240
His	Pro	Asn	Ser	Lys	Phe	Ile	Glu	Ser	Ser	Asn	Ile	Lys	Leu	Asp	Arg
				245					250					255	
Lys	Gly	Phe	Ile	Pro	Val	Asn	Asp	Lys	Phe	Glu	Thr	Asn	Val	Pro	Asn
			260					265					270		
Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Ala	Thr	Ser	His	Tyr	Arg	His	Val	Asp
	275						280					285			
Leu	Pro	Ala	Ser	Val	Pro	Leu	Ala	Trp	Gly	Ala	His	Arg	Ala	Ala	Ser
	290					295					300				
Ile	Val	Ala	Glu	Gln	Ile	Ala	Gly	Asn	Asp	Thr	Ile	Glu	Phe	Lys	Gly
305					310					315					320
Phe	Leu	Gly	Asn	Asn	Ile	Val	Lys	Phe	Phe	Asp	Tyr	Thr	Phe	Ala	Ser
				325					330					335	
Val	Gly	Val	Lys	Pro	Asn	Glu	Leu	Lys	Gln	Phe	Asp	Tyr	Lys	Met	Val
			340					345					350		
Glu	Val	Thr	Gln	Gly	Ala	His	Ala	Asn	Tyr	Tyr	Pro	Gly	Asn	Ser	Pro
		355					360					365			
Leu	His	Leu	Arg	Val	Tyr	Tyr	Asp	Thr	Ser	Asn	Arg	Gln	Ile	Leu	Arg
	370					375					380				
Ala	Ala	Ala	Val	Gly	Lys	Glu	Gly	Ala	Asp	Lys	Arg	Ile	Asp	Val	Leu
385					390					395					400
Ser	Met	Ala	Met	Met	Asn	Gln	Leu	Thr	Val	Asp	Glu	Leu	Thr	Glu	Phe
				405					410					415	
Glu	Val	Ala	Tyr	Ala	Pro	Pro	Tyr	Ser	His	Pro	Lys	Asp	Leu	Ile	Asn
		420						425					430		
Met	Ile	Gly	Tyr	Lys	Ala	Lys									
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<210> 21
 <211> 1353
 <212> DNA

<213> Homo sapiens

<400> 21

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atttttagatc caattttaat ttttggtttt gatttaaacg ttggttggtgc agctttgggt 600
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<210> 22

<211> 451

<212> PRT

<213> Homo sapiens

<400> 22

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Ala Met Met His Phe Ser Leu Pro Met Met Ile Gly Thr Leu Leu Ser
      20              25              30

Val Ile Tyr Gly Ile Leu Asn Ile Tyr Phe Ile Gly Phe Leu Glu Asp
      35              40              45

Ser His Met Ile Ser Ala Ile Ser Leu Thr Leu Pro Val Phe Ala Ile
      50              55              60

Leu Met Gly Leu Gly Asn Leu Phe Gly Val Gly Ala Gly Thr Tyr Ile
      65              70              75              80

Ser Arg Leu Leu Gly Ala Lys Asp Tyr Ser Lys Ser Lys Phe Val Ser
      85              90              95

Ser Phe Ser Ile Tyr Gly Gly Ile Ala Leu Gly Leu Ile Val Ile Leu
      100             105             110

Val Thr Leu Pro Phe Ser Asp Gln Ile Ala Ala Ile Leu Gly Ala Arg
      115             120             125

Gly Glu Thr Leu Ala Leu Thr Ser Asn Tyr Leu Lys Val Met Phe Leu
      130             135             140
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09925637 081004

Ser	Ala	Pro	Phe	Val	Ile	Leu	Phe	Phe	Ile	Leu	Glu	Gln	Phe	Ala	Arg	145	150	155	160
Ala	Ile	Gly	Ala	Pro	Met	Val	Ser	Met	Ile	Gly	Met	Leu	Ala	Ser	Val	165	170	175	
Gly	Leu	Asn	Ile	Ile	Leu	Asp	Pro	Ile	Leu	Ile	Phe	Gly	Phe	Asp	Leu	180	185	190	
Asn	Val	Val	Gly	Ala	Ala	Leu	Gly	Thr	Ala	Ile	Ser	Asn	Val	Ala	Ala	195	200	205	
Ala	Leu	Phe	Phe	Ile	Ile	Tyr	Phe	Met	Lys	Asn	Ser	Asp	Val	Val	Ser	210	215	220	
Val	Asn	Ile	Lys	Leu	Ala	Lys	Pro	Asn	Lys	Glu	Met	Leu	Ser	Glu	Ile	225	230	235	240
Phe	Lys	Ile	Gly	Ile	Pro	Ala	Phe	Leu	Met	Ser	Ile	Leu	Met	Gly	Phe	245	250	255	
Thr	Gly	Leu	Val	Leu	Asn	Leu	Phe	Leu	Ala	His	Tyr	Gly	Asn	Phe	Ala	260	265	270	
Ile	Ala	Ser	Tyr	Gly	Ile	Ser	Phe	Arg	Leu	Val	Gln	Phe	Pro	Glu	Leu	275	280	285	
Ile	Ile	Met	Gly	Leu	Cys	Glu	Gly	Val	Val	Pro	Leu	Ile	Ala	Tyr	Asn	290	295	300	
Phe	Met	Ala	Asn	Lys	Gly	Arg	Met	Lys	Asp	Val	Ile	Lys	Ala	Val	Ile	305	310	315	320
Met	Ser	Ile	Gly	Val	Ile	Phe	Val	Val	Cys	Met	Ser	Ala	Val	Phe	Thr	325	330	335	
Ile	Gly	His	His	Met	Val	Gly	Leu	Phe	Thr	Thr	Asp	Gln	Ala	Ile	Val	340	345	350	
Glu	Met	Ala	Thr	Phe	Ile	Leu	Lys	Val	Thr	Met	Ala	Ser	Leu	Leu	Leu	355	360	365	
Asn	Gly	Ile	Gly	Phe	Leu	Phe	Thr	Gly	Met	Leu	Gln	Ala	Thr	Gly	Gln	370	375	380	
Gly	Arg	Gly	Ala	Thr	Ile	Met	Ala	Ile	Leu	Gln	Gly	Ala	Ile	Ile	Ile	385	390	395	400
Pro	Val	Leu	Phe	Ile	Met	Asn	Ala	Leu	Phe	Gly	Leu	Thr	Gly	Val	Ile	405	410	415	
Trp	Ser	Leu	Leu	Ile	Ala	Glu	Ser	Leu	Cys	Ala	Leu	Ala	Ala	Met	Leu	420	425	430	
Ile	Val	Tyr	Leu	Leu	Arg	Asp	Arg	Leu	Thr	Val	Asp	Thr	Ser	Glu	Leu	435	440	445	
Ile	Glu	Gly														450			

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 <211> 1479
 <212> DNA
 <213> Homo sapiens

<400> 23
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 gcttcagttg gatatactgt agacagtcac aagttctgtc aaaatgtagc tgatcaaggg 180
 tgtaagttgg tagtggtcaa taaagaacaa tcattaccag ctaacgtaac acaagtgggt 240
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 catcagttag tgacatttgg tgtaacgggt acaaattggt aaacttctat tgcgacgatg 360
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 caaattaatg aaacaaagac aaaagggtgca aatacgacac cagaaacagt ttctttaact 480
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 gtcattttca caccggataa tccggcaaat gatgaccgga aaatgttaac ggcagaatta 1260
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 gaagcagctt acaaaaagtt cgggtggtggc cctgttgat 1479

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 <211> 493
 <212> PRT
 <213> Homo sapiens

<400> 24
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 20 25 30
 Ala Arg Glu Gly Ser Ile Phe Val Ala Ser Val Gly Tyr Thr Val Asp
 35 40 45
 Ser His Lys Phe Cys Gln Asn Val Ala Asp Gln Gly Cys Lys Leu Val
 50 55 60
 Val Val Asn Lys Glu Gln Ser Leu Pro Ala Asn Val Thr Gln Val Val
 65 70 75 80
 Val Pro Asp Thr Leu Arg Val Ala Ser Ile Leu Ala His Thr Leu Tyr
 85 90 95
 Asp Tyr Pro Ser His Gln Leu Val Thr Phe Gly Val Thr Gly Thr Asn
 100 105 110

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Gly	Lys	Thr	Ser	Ile	Ala	Thr	Met	Ile	His	Leu	Ile	Gln	Arg	Lys	Leu	115	120	125
Gln	Lys	Asn	Ser	Ala	Tyr	Leu	Gly	Thr	Asn	Gly	Phe	Gln	Ile	Asn	Glu	130	135	140
Thr	Lys	Thr	Lys	Gly	Ala	Asn	Thr	Thr	Pro	Glu	Thr	Val	Ser	Leu	Thr	145	150	155
Lys	Lys	Ile	Lys	Glu	Ala	Val	Asp	Ala	Gly	Ala	Glu	Ser	Met	Thr	Leu	165	170	175
Glu	Val	Ser	Ser	His	Gly	Leu	Val	Leu	Gly	Arg	Leu	Arg	Gly	Val	Glu	180	185	190
Phe	Asp	Val	Ala	Ile	Phe	Ser	Asn	Leu	Thr	Gln	Asp	His	Leu	Asp	Phe	195	200	205
His	Gly	Thr	Met	Glu	Ala	Tyr	Gly	His	Ala	Lys	Ser	Leu	Leu	Phe	Ser	210	215	220
Gln	Leu	Gly	Glu	Asp	Leu	Ser	Lys	Glu	Lys	Tyr	Val	Val	Leu	Asn	Asn	225	230	235
Asp	Asp	Ser	Phe	Ser	Glu	Tyr	Leu	Arg	Thr	Val	Thr	Pro	Tyr	Glu	Val	245	250	255
Phe	Ser	Tyr	Gly	Ile	Asp	Glu	Glu	Ala	Gln	Phe	Met	Ala	Lys	Asn	Ile	260	265	270
Gln	Glu	Ser	Leu	Gln	Gly	Val	Ser	Phe	Asp	Phe	Val	Thr	Pro	Phe	Gly	275	280	285
Thr	Tyr	Pro	Val	Lys	Ser	Pro	Tyr	Val	Gly	Lys	Phe	Asn	Ile	Ser	Asn	290	295	300
Ile	Met	Ala	Ala	Met	Ile	Ala	Val	Trp	Ser	Lys	Gly	Thr	Ser	Leu	Glu	305	310	315
Thr	Ile	Ile	Lys	Ala	Val	Glu	Asn	Leu	Glu	Pro	Val	Glu	Gly	Arg	Leu	325	330	335
Glu	Val	Leu	Asp	Pro	Ser	Leu	Pro	Ile	Asp	Leu	Ile	Ile	Asp	Tyr	Ala	340	345	350
His	Thr	Ala	Asp	Gly	Met	Asn	Lys	Leu	Ile	Asp	Ala	Val	Gln	Pro	Phe	355	360	365
Val	Lys	Gln	Lys	Leu	Ile	Phe	Leu	Val	Gly	Met	Ala	Gly	Glu	Arg	Asp	370	375	380
Leu	Thr	Lys	Thr	Pro	Glu	Met	Gly	Arg	Val	Ala	Cys	Arg	Ala	Asp	Tyr	385	390	395
Val	Ile	Phe	Thr	Pro	Asp	Asn	Pro	Ala	Asn	Asp	Asp	Pro	Lys	Met	Leu	405	410	415
Thr	Ala	Glu	Leu	Ala	Lys	Gly	Ala	Thr	His	Gln	Asn	Tyr	Ile	Glu	Phe	420	425	430

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385 390 395 400

Asp Ser Gly Gln Gln His Val Glu Lys Ala Gln His Phe Asn Ser Lys
405 410 415

Asp Asp Met Ile Glu Val Leu Ile Asn Asp Leu Lys Ala His Asp Arg
420 425 430

Val Leu Val Lys Gly Ser Arg Gly Met Lys Leu Glu Glu Val Val Asn
435 440 445

Ala Leu Ile Ser
450

<210> 27

<211> 399

<212> DNA

<213> Homo sapiens

<400> 27

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cgtcacgaga agttagaatt acctgcatca aatattaaaa aagaaattgc tgaaatctta 120
aagagtgaag gtttcattaa aaatgttgaa tacgtagaag atgataaaca aggtgtactt 180
cgttttattct taaaatatgg tcaaaacgat gagcgtgtta tcacaggatt aaaacgtatt 240
tcaaaaccag gtttacgtgt ttatgcaaaa gctagcgaaa tgcctaaagt attaaatggg 300
ttaggtattg cattagtatc aacttctgaa ggtgtaatca ctgacaaaaga agcaagaaaa 360
cgtaatgttg gtggagaaat tatcgcatatc gtttggttaa 399

<210> 28

<211> 132

<212> PRT

<213> Homo sapiens

<400> 28

Met Thr Met Thr Asp Pro Ile Ala Asp Met Leu Thr Arg Val Arg Asn
1 5 10 15

Ala Asn Met Val Arg His Glu Lys Leu Glu Leu Pro Ala Ser Asn Ile
20 25 30

Lys Lys Glu Ile Ala Glu Ile Leu Lys Ser Glu Gly Phe Ile Lys Asn
35 40 45

Val Glu Tyr Val Glu Asp Asp Lys Gln Gly Val Leu Arg Leu Phe Leu
50 55 60

Lys Tyr Gly Gln Asn Asp Glu Arg Val Ile Thr Gly Leu Lys Arg Ile
65 70 75 80

Ser Lys Pro Gly Leu Arg Val Tyr Ala Lys Ala Ser Glu Met Pro Lys
85 90 95

Val Leu Asn Gly Leu Gly Ile Ala Leu Val Ser Thr Ser Glu Gly Val
100 105 110

Ile Thr Asp Lys Glu Ala Arg Lys Arg Asn Val Gly Gly Glu Ile Ile
115 120 125

Ala Tyr Val Trp
130

<210> 29
<211> 267
<212> DNA
<213> Homo sapiens

<400> 29
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gatactgggt caccagaagt acaaatcgct gtacttactg cagaaatcaa cgcagtaaac 120
gaacacttac gtacacacaa aaaagaccac cattcacgtc gtggattatt aaaaatggta 180
ggtcgtcgta gacatttatt aaactactta cgtagtaaag atattcaacg ttaccgtgaa 240
ttaattaaat cacttggcat ccgtcgt 267

<210> 30
<211> 89
<212> PRT
<213> Homo sapiens

<400> 30
Met Ala Ile Ser Gln Glu Arg Lys Asn Glu Ile Ile Lys Glu Tyr Arg
1 5 10 15
Val His Glu Thr Asp Thr Gly Ser Pro Glu Val Gln Ile Ala Val Leu
20 25 30
Thr Ala Glu Ile Asn Ala Val Asn Glu His Leu Arg Thr His Lys Lys
35 40 45
Asp His His Ser Arg Arg Gly Leu Leu Lys Met Val Gly Arg Arg Arg
50 55 60
His Leu Leu Asn Tyr Leu Arg Ser Lys Asp Ile Gln Arg Tyr Arg Glu
65 70 75 80
Leu Ile Lys Ser Leu Gly Ile Arg Arg
85

<210> 31
<211> 666
<212> DNA
<213> Homo sapiens

<400> 31
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cgtgattggg aagctaaatg gtatgctgaa aaagacttcg cttcactttt acacgaagat 120
ttaaaaaatcc gtaaatttat tgataatgaa ttaaaagaag catcagtttc tcacgtagag 180
attgaacgtg ctgcaaaccg tatcaacatt gcaattcata ctggtaaacc tggatatggta 240
attggtaaag gcggttcaga aatcgaaaaa ttacgcaaca aattaaatgc gtttaactgat 300
aaaaaaagtac acatcaacgt aattgaaatc aaaaaagttg atcttgacgc tcgttttagta 360
gctgaaaaca tcgcacgtca attagaaaac cgtgcttcat tccgtcgtgt acaaaaacaa 420
gcaatcacta gagctatgaa acttggtgct aaaggatatca aaactcaagt atctggtcgt 480
ttaggcggag ctgacatcgc tcgtgctgaa caatattcag aagggaactgt tccacttcat 540
acgttacgtg ctgacatcga ttatgcacac gctgaagctg acactactta cggtaaatta 600
ggcgtaaag tatggattta tcgtggagaa gttcttccta ctaagaacac tagtggagga 660
ggaaaa 666

<210> 32
 <211> 217
 <212> PRT
 <213> Homo sapiens

<400> 32
 Val Gly Gln Lys Ile Asn Pro Ile Gly Leu Arg Val Gly Ile Ile Arg
 1 5 10 15
 Asp Trp Glu Ala Lys Trp Tyr Ala Glu Lys Asp Phe Ala Ser Leu Leu
 20 25 30
 His Glu Asp Leu Lys Ile Arg Lys Phe Ile Asp Asn Glu Leu Lys Glu
 35 40 45
 Ala Ser Val Ser His Val Glu Ile Glu Arg Ala Ala Asn Arg Ile Asn
 50 55 60
 Ile Ala Ile His Thr Gly Lys Pro Gly Met Val Ile Gly Lys Gly Gly
 65 70 75 80
 Ser Glu Ile Glu Lys Leu Arg Asn Lys Leu Asn Ala Leu Thr Asp Lys
 85 90 95
 Lys Val His Ile Asn Val Ile Glu Ile Lys Lys Val Asp Leu Asp Ala
 100 105 110
 Arg Leu Val Ala Glu Asn Ile Ala Arg Gln Leu Glu Asn Arg Ala Ser
 115 120 125
 Phe Arg Arg Val Gln Lys Gln Ala Ile Thr Arg Ala Met Lys Leu Gly
 130 135 140
 Ala Lys Gly Ile Lys Thr Gln Val Ser Gly Arg Leu Gly Gly Ala Asp
 145 150 155 160
 Ile Ala Arg Ala Glu Gln Tyr Ser Glu Gly Thr Val Pro Leu His Thr
 165 170 175
 Leu Arg Ala Asp Ile Asp Tyr Ala His Ala Glu Ala Asp Thr Thr Tyr
 180 185 190
 Gly Lys Leu Gly Val Lys Val Trp Ile Tyr Arg Gly Glu Val Leu Pro
 195 200 205
 Thr Lys Asn Thr Ser Gly Gly Gly Lys
 210 215

<210> 33
 <211> 498
 <212> DNA
 <213> Homo sapiens

<400> 33
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 gtagcaaaaag ttgtaaaagg tggctcgctgt ttccgtttca ctgcattagt tgtagttgga 120
 gacaaaaatg gtcgtgtagg tttcgggtact ggtaaagctc aagaggtacc agaagcaatc 180
 aaaaaagctg ttgaagcagc taaaaaagat ttagtagttg ttccacgtgt tgaaggtaca 240

actccacaca caattactgg ccgttacggt tcaggaagcg tatttatgaa accggctgca 300
 cctggtacag gagttatcgc tgggtggtcct gttcgtgccg tacttgaatt agcaggtatc 360
 actgatatct taagtaaattc attaggatca aacacaccaa tcaacatggg tcgtgctaca 420
 atcgatgggt taaaaaacct taaaaatgct gaagatggtg cgaaattacg tggcaaaaaca 480
 gtagaagaat tatacaat 498

<210> 34
 <211> 166
 <212> PRT
 <213> Homo sapiens

<400> 34
 Met Ala Arg Arg Glu Glu Thr Lys Glu Phe Glu Glu Arg Val Val
 1 5 10 15
 Thr Ile Asn Arg Val Ala Lys Val Val Lys Gly Gly Arg Arg Phe Arg
 20 25 30
 Phe Thr Ala Leu Val Val Val Gly Asp Lys Asn Gly Arg Val Gly Phe
 35 40 45
 Gly Thr Gly Lys Ala Gln Glu Val Pro Glu Ala Ile Lys Lys Ala Val
 50 55 60
 Glu Ala Ala Lys Lys Asp Leu Val Val Val Pro Arg Val Glu Gly Thr
 65 70 75 80
 Thr Pro His Thr Ile Thr Gly Arg Tyr Gly Ser Gly Ser Val Phe Met
 85 90 95
 Lys Pro Ala Ala Pro Gly Thr Gly Val Ile Ala Gly Gly Pro Val Arg
 100 105 110
 Ala Val Leu Glu Leu Ala Gly Ile Thr Asp Ile Leu Ser Lys Ser Leu
 115 120 125
 Gly Ser Asn Thr Pro Ile Asn Met Val Arg Ala Thr Ile Asp Gly Leu
 130 135 140
 Gln Asn Leu Lys Asn Ala Glu Asp Val Ala Lys Leu Arg Gly Lys Thr
 145 150 155 160
 Val Glu Glu Leu Tyr Asn
 165

<210> 35
 <211> 390
 <212> DNA
 <213> Homo sapiens

<400> 35
 atggcacaag ttgaatatag aggcacaggc cgtcgtaaaa actcagtagc acgtgtacgt 60
 ttagtaccag gtgaaggtaa catcacagtt aataaccgtg acgtacgcga atacttacca 120
 ttcgaatcat taattttaga cttaaaccac ccatttgatg taactgaaac taaaggtaac 180
 tatgatgttt tagttaacgt tcatggtggt ggttttactg gacaagctca agctatccgt 240
 cacggaatcg ctcgtgcatt attagaagca gatcctgaat acagagggtc tttaaaacgc 300
 gctggattac ttactcgtga cccacgtatg aaagaacata aaaaaccagg tcttaaagca 360
 gctcgtcgtt cacctcaatt ctcaaaacgt 390

[illegible]

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<210> 37
<211> 306
<212> DNA
<213> Homo sapiens
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<210> 38
<211> 102
<212> PRT
<213> Homo sapiens
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28

Figure 1 displays 15 histograms showing the distribution of the number of non-zero elements in the product of two sparse matrices. The histograms are arranged in a grid. The top row shows distributions for 10000, 1000, 100, 10, and 1 non-zero elements. The middle row shows distributions for 10000, 1000, 100, 10, and 1 non-zero elements. The bottom row shows distributions for 10000, 1000, 100, 10, and 1 non-zero elements. The x-axis for all histograms is 'Number of non-zero elements' and the y-axis is 'Frequency'.

<400>	39						
atgggctaaga	aatctaaaat	agcaaaagag	agaaaaagag	aagagttagt	aaataaatat	60	
tacgaattac	gtaaagagtt	aaaagcaaaa	ggtgattacg	aagcgттааg	aaaattacca	120	
agagatttcat	cacctacacg	tttaactaga	agatgtaaag	taactggaag	acctagaggt	180	
gtattacgta	aatttgaat	gtctcgtatt	gcgttttagag	aacatgcgca	caaaggacaa	240	
attccaggtg	ttaaaaaatc	aagtttg				267	

<400> 40
Met Ala Lys Lys Ser Lys Ile Ala Lys Glu Arg Lys Arg Glu Glu Leu
1 5 10 15

Tyr Glu Ala Leu Arg Lys Leu Pro Arg Asp Ser Ser Pro Thr Arg Leu
35 40 45

Thr Arg Arg Cys Lys Val Thr Gly Arg Pro Arg Gly Val Leu Arg Lys
50 55 60

Phe Glu Met Ser Arg Ile Ala Phe Arg Glu His Ala His Lys Gly Gln
65 70 75 80

Ile Pro Gly Val Lys Lys Ser Ser Trp
85

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<210> 41
<211> 276
<212> DNA
<213> Homo sapiens
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<400> 41
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gctcaagaag gaagcgaaaa gaaacaagta atcaaaacat ggtcacgtcg ttctacaatt 120
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ttccctaatt tcacgggaca tacttttgcg gtatacgacg gacgtaaaca cgtacctgta 180
 tatgtaactg aagatatggg aggtcataaa ttaggtgagt ttgctcctac tcgtacattc 240
 aaaggacacg ttgcagacga caagaaaaca agaaga 276

<210> 42
 <211> 92
 <212> PRT
 <213> Homo sapiens

<400> 42
 Met Ala Arg Ser Ile Lys Lys Gly Pro Phe Val Asp Glu His Leu Met
 1 5 10 15
 Lys Lys Val Glu Ala Gln Glu Gly Ser Glu Lys Lys Gln Val Ile Lys
 20 25 30
 Thr Trp Ser Arg Arg Ser Thr Ile Phe Pro Asn Phe Ile Gly His Thr
 35 40 45
 Phe Ala Val Tyr Asp Gly Arg Lys His Val Pro Val Tyr Val Thr Glu
 50 55 60
 Asp Met Val Gly His Lys Leu Gly Glu Phe Ala Pro Thr Arg Thr Phe
 65 70 75 80
 Lys Gly His Val Ala Asp Asp Lys Lys Thr Arg Arg
 85 90

<210> 43
 <211> 183
 <212> DNA
 <213> Homo sapiens

<400> 43
 atggctaaaa cttcaatggg tgctaagcaa caaaaaaac aaaaatatgc agttcgtgaa 60
 tacactcggt gtgaacggtg tggccgtcca cattctgtat atcgtaaatt taaattatgc 120
 cgtatttgtt tccgtgaatt agcttacaaa ggccaaatcc ctggcgttcg taaagctagc 180
 tgg 183

<210> 44
 <211> 61
 <212> PRT
 <213> Homo sapiens

<400> 44
 Met Ala Lys Thr Ser Met Val Ala Lys Gln Gln Lys Lys Gln Lys Tyr
 1 5 10 15
 Ala Val Arg Glu Tyr Thr Arg Cys Glu Arg Cys Gly Arg Pro His Ser
 20 25 30
 Val Tyr Arg Lys Phe Lys Leu Cys Arg Ile Cys Phe Arg Glu Leu Ala
 35 40 45
 Tyr Lys Gly Gln Ile Pro Gly Val Arg Lys Ala Ser Trp
 50 55 60

<210> 45

<211> 699
 <212> DNA
 <213> Homo sapiens

<400> 45
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 aacttaaaaa aagaaggata cgatgtgtac tgtgcatacg atggtaatga tgcagtcgac 120
 ttaatttatg aagaagaacc agacatcgta ttactagata tcatgttacc tggctcgtgat 180
 ggtatggaag tatgtcgtga agtgcgcaaa aaatacgaaa tgccaataat aatgcttact 240
 gctaaagatt cagaaattga taaagtgctt ggtttagaac taggtgcaga tgactatgta 300
 acgaaaccgt ttagtacgcg tgaattaatc gcacgtgtga aagcgaactt acgtcgtcat 360
 tactcacaac cagcacaaga cactggaaat gtaacgaatg aaatcacaat taaagatatt 420
 gtgatttatt cagacgcata ttctattaaa aaacgtggcg aagatattga attaacacat 480
 cgtgaatttg aattgttcca ttatttatca aaacatatgg gacaagtaat gacacgtgaa 540
 catttattac aaacagtatg gggctatgat tactttggcg atgtacgtac ggtcgtatgta 600
 acgattcgtc gtttacgtga aaagattgaa gatgatccgt cacatcctga atatattgtg 660
 acgcgtagag gcgttgata tttctccaa caacatgag 699

<210> 46
 <211> 233
 <212> PRT
 <213> Homo sapiens

<400> 46
 Met Ala Arg Lys Val Val Val Val Asp Asp Glu Lys Pro Ile Ala Asp
 1 5 10 15
 Ile Leu Glu Phe Asn Leu Lys Lys Glu Gly Tyr Asp Val Tyr Cys Ala
 20 25 30
 Tyr Asp Gly Asn Asp Ala Val Asp Leu Ile Tyr Glu Glu Glu Pro Asp
 35 40 45
 Ile Val Leu Leu Asp Ile Met Leu Pro Gly Arg Asp Gly Met Glu Val
 50 55 60
 Cys Arg Glu Val Arg Lys Lys Tyr Glu Met Pro Ile Ile Met Leu Thr
 65 70 75 80
 Ala Lys Asp Ser Glu Ile Asp Lys Val Leu Gly Leu Glu Leu Gly Ala
 85 90 95
 Asp Asp Tyr Val Thr Lys Pro Phe Ser Thr Arg Glu Leu Ile Ala Arg
 100 105 110
 Val Lys Ala Asn Leu Arg Arg His Tyr Ser Gln Pro Ala Gln Asp Thr
 115 120 125
 Gly Asn Val Thr Asn Glu Ile Thr Ile Lys Asp Ile Val Ile Tyr Pro
 130 135 140
 Asp Ala Tyr Ser Ile Lys Lys Arg Gly Glu Asp Ile Glu Leu Thr His
 145 150 155 160
 Arg Glu Phe Glu Leu Phe His Tyr Leu Ser Lys His Met Gly Gln Val
 165 170 175
 Met Thr Arg Glu His Leu Leu Gln Thr Val Trp Gly Tyr Asp Tyr Phe
 180 185 190

Gly Asp Val Arg Thr Val Asp Val Thr Ile Arg Arg Leu Arg Glu Lys
195 200 205

Ile Glu Asp Asp Pro Ser His Pro Glu Tyr Ile Val Thr Arg Arg Gly
210 215 220

Val Gly Tyr Phe Leu Gln Gln His Glu
225 230

<210> 47
<211> 937
<212> DNA
<213> Homo sapiens

<400> 47
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gagtttggat atcaattaga caatgataca actgggggaa tgttggtgtg tgtcagcaca 120
tccaaatggt acgagcgaga ttattaatgg accatatcaa ggtcaaacaat tagaccgtat 180
ttggtcagaa catcgtgaat tgtttggtga tttcccaagc aaagattttc cgcttctaac 240
taaaatagtg gatgcaagag aatcactttc tattcatgtg caccctgata attccttatgc 300
ttatgagcat gaaaacgggc aatatggcaa atctgaatgt tggatatatta tagatgcaga 360
agaagatgca gaaatagtta tagggacatt agcagagtct agagaagaag ttgcgaatca 420
tggtcaacac ggaacgatag agtcgatact tagatatatt aaagtaaaac ctggagaatt 480
ctatttttatt ccagcaggaa cagtwcatac tatttcttca ggaatattag catacgaaac 540
gatgcaatcg tcagacatta catatagact ttatgatttc aatcgtcaag ataatacaata 600
taatgataga ccgttaaata ttgaaaaagc ttttagacgtt attcagtaca atgcaccatt 660
acctaataatt ttgcctgaaa gcgaaattat tgaaaacat aagtgtacac acattgtatc 720
gaatgatttc tttacattgg ttaaattggga aatttctggc acgttaaatt atatgaagcc 780
tagagagttc tgtttagtta cagtgttgga aggcgaaggg caaatgattg tctatggtga 840
aattttcaaa ctgactactg gtacaaactt tattttgact tctgaagatt tggatagtgt 900
ctttgaaggt gatttcacat tgatgattag ctatgtg 937

<210> 48
<211> 312
<212> PRT
<213> Homo sapiens

<400> 48
Met Pro Leu Phe Leu Gln Pro Ile Leu Lys Thr Lys Leu Trp Gly Gly
1 5 10 15
Gln Arg Leu Ser Glu Phe Gly Tyr Gln Leu Asp Asn Asp Thr Thr Gly
20 25 30
Glu Cys Trp Cys Val Ser Ala His Pro Asn Gly Thr Ser Glu Ile Ile
35 40 45
Asn Gly Pro Tyr Gln Gly Gln Thr Leu Asp Arg Ile Trp Ser Glu His
50 55 60
Arg Glu Leu Phe Gly Asp Phe Pro Ser Lys Asp Phe Pro Leu Leu Thr
65 70 75 80
Lys Ile Val Asp Ala Arg Glu Ser Leu Ser Ile His Val His Pro Asp
85 90 95
Asn Ser Tyr Ala Tyr Glu His Glu Asn Gly Gln Tyr Gly Lys Ser Glu
100 105 110

<210> 50
 <211> 279
 <212> PRT
 <213> Homo sapiens

<400> 50
 Met Ala Val Leu Tyr Leu Val Gly Thr Pro Ile Gly Asn Leu Ala Asp
 1 5 10 15
 Ile Thr Tyr Arg Ala Val Asp Val Leu Lys Arg Val Asp Met Ile Ala
 20 25 30
 Cys Glu Asp Thr Arg Val Thr Ser Lys Leu Cys Asn His Tyr Asp Ile
 35 40 45
 Pro Thr Pro Leu Lys Ser Tyr His Glu His Asn Lys Asp Lys Gln Thr
 50 55 60
 Ala Phe Ile Ile Glu Gln Leu Glu Leu Gly Leu Asp Val Ala Leu Val
 65 70 75 80
 Ser Asp Ala Gly Leu Pro Leu Ile Ser Asp Pro Gly Tyr Glu Leu Val
 85 90 95
 Val Ala Ala Arg Glu Ala Asn Ile Lys Val Glu Thr Val Pro Gly Pro
 100 105 110
 Asn Ala Gly Leu Thr Ala Leu Met Ala Ser Gly Leu Pro Ser Tyr Val
 115 120 125
 Tyr Thr Phe Leu Gly Phe Leu Pro Arg Lys Glu Lys Glu Lys Ser Ala
 130 135 140
 Val Leu Glu Gln Arg Met His Glu Asn Ser Thr Leu Ile Ile Tyr Glu
 145 150 155 160
 Ser Pro His Arg Val Thr Asp Thr Leu Lys Thr Ile Ala Lys Ile Asp
 165 170 175
 Ala Thr Arg Gln Val Ser Leu Gly Arg Glu Leu Thr Lys Lys Phe Glu
 180 185 190
 Gln Ile Val Thr Asp Asp Val Thr Gln Leu Gln Ala Leu Ile Gln Gln
 195 200 205
 Gly Asp Val Pro Leu Lys Gly Glu Phe Val Ile Leu Ile Glu Gly Ala
 210 215 220
 Lys Ala Asn Asn Glu Ile Ser Trp Phe Asp Asp Leu Ser Ile Asn Glu
 225 230 235 240
 His Val Asp His Tyr Ile Gln Thr Ser Gln Met Lys Pro Lys Gln Ala
 245 250 255
 Ile Lys Lys Val Ala Glu Glu Arg Gln Leu Lys Thr Asn Glu Val Tyr
 260 265 270
 Asn Ile Tyr His Gln Ile Ser
 275

09955637-081001

<210> 51
 <211> 624
 <212> DNA
 <213> Homo sapiens

<400> 51
 atgaaatttg gaaaaacaat cgcagtagta ttagcatcta gtgtcttgct tgcaggatgt 60
 actacggata aaaaagaaat taaggcatat ttaaagcaag tggataaaat taaagatgat 120
 gaagaaccaa ttaaaactgt tggtaaagaaa attgctgaat tagatgagaa aaagaaaaaa 180
 ttaactgaag atgtcaatag taaagataca gcagttcgcg gtaaagcagt aaaggattta 240
 attaaaaatg cccgatgatcg tctaaaggaa tttgaaaaag aagaagacgc aattaagaag 300
 tctgaacaag actttaagaa agcaaaaagt cacgttgata acattgataa tgatgttaaa 360
 cgtaaagaag taaaacaatt agatgatgta ttaaaagaaa aatataagtt acacagtgtat 420
 tacgcgaaag catataaaaa ggctgtaaac tcagagaaaa cattatttaa atattttaat 480
 caaaatgacg cgacacaaca aggtgttaac gaaaaatcaw aagcaataga acagaactat 540
 aaaaagttaa aagaagtatc agataagtat acaaaagtac taaataaggt tggtaaagaa 600
 aagcaagacg ttgatcaatt taaa 624

<210> 52
 <211> 208
 <212> PRT
 <213> Homo sapiens

<220>
 <221> MISC_FEATURE
 <222> (174)..(174)
 <223> Xaa equals any amino acid

<400> 52
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 1 5 10 15
 Leu Ala Gly Cys Thr Thr Asp Lys Lys Glu Ile Lys Ala Tyr Leu Lys
 20 25 30
 Gln Val Asp Lys Ile Lys Asp Asp Glu Glu Pro Ile Lys Thr Val Gly
 35 40 45
 Lys Lys Ile Ala Glu Leu Asp Glu Lys Lys Lys Lys Leu Thr Glu Asp
 50 55 60
 Val Asn Ser Lys Asp Thr Ala Val Arg Gly Lys Ala Val Lys Asp Leu
 65 70 75 80
 Ile Lys Asn Ala Asp Asp Arg Leu Lys Glu Phe Glu Lys Glu Glu Asp
 85 90 95
 Ala Ile Lys Lys Ser Glu Gln Asp Phe Lys Lys Ala Lys Ser His Val
 100 105 110
 Asp Asn Ile Asp Asn Asp Val Lys Arg Lys Glu Val Lys Gln Leu Asp
 115 120 125
 Asp Val Leu Lys Glu Lys Tyr Lys Leu His Ser Asp Tyr Ala Lys Ala
 130 135 140
 Tyr Lys Lys Ala Val Asn Ser Glu Lys Thr Leu Phe Lys Tyr Leu Asn
 145 150 155 160

Gln Asn Asp Ala Thr Gln Gln Gly Val Asn Glu Lys Ser Xaa Ala Ile
 165 170 175

Glu Gln Asn Tyr Lys Lys Leu Lys Glu Val Ser Asp Lys Tyr Thr Lys
 180 185 190

Val Leu Asn Lys Val Gly Lys Glu Lys Gln Asp Val Asp Gln Phe Lys
 195 200 205

<210> 53
 <211> 717
 <212> DNA
 <213> Homo sapiens

<400> 53
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 catcaatcta atttcaaacc cggtgataaa ttgccaagcg tgacgcaatt aaaagaacgt 120
 tatcaagtaa gtaagagtac tatcattaaa gcattaggct tattggaaca agatggtttg 180
 atctatcaag cacaaggcag tgggtatttat gtgagaaata ttgctgatgc caatcgatc 240
 aacgtcttta agactaatgg tttctctaaa agtttaggtg aacaccgaat gacaagtaag 300
 gtacttggtt ttaaggagat tgcaacgcca cctaaatctg tacaagatga gctccaatta 360
 aatgcagatg ataccgtcta ctatttagag cgattaagat tcgtggacga tgatgtttta 420
 tgtatcgaat attcttatta tcataaagaa atcgtgaaat atttaaata tgatattgct 480
 aagggctcta tcttcgacta tttagaatca aacatgaaac ttcgtattgg tttttcagat 540
 attttcttta atgtagatca actcacttca agtgaagctt cattactaca attgtctaca 600
 ggtgaaccat gtttacgtta ccaccagact ttttatacaa tgactggcaa accctttgat 660
 tcattctgaca tcgtatttca ttatcgtcat gcacagtttt atattcctag taaaaag 717

<210> 54
 <211> 239
 <212> PRT
 <213> Homo sapiens

<400> 54
 Ile Glu Asp Arg Ile Leu Leu Lys Tyr Glu His Ile Ala Lys Gln Leu
 1 5 10 15
 Asn Ala Phe Ile His Gln Ser Asn Phe Lys Pro Gly Asp Lys Leu Pro
 20 25 30
 Ser Val Thr Gln Leu Lys Glu Arg Tyr Gln Val Ser Lys Ser Thr Ile
 35 40 45
 Ile Lys Ala Leu Gly Leu Leu Glu Gln Asp Gly Leu Ile Tyr Gln Ala
 50 55 60
 Gln Gly Ser Gly Ile Tyr Val Arg Asn Ile Ala Asp Ala Asn Arg Ile
 65 70 75 80
 Asn Val Phe Lys Thr Asn Gly Phe Ser Lys Ser Leu Gly Glu His Arg
 85 90 95
 Met Thr Ser Lys Val Leu Val Phe Lys Glu Ile Ala Thr Pro Pro Lys
 100 105 110
 Ser Val Gln Asp Glu Leu Gln Leu Asn Ala Asp Asp Thr Val Tyr Tyr
 115 120 125

Leu Glu Arg Leu Arg Phe Val Asp Asp Asp Val Leu Cys Ile Glu Tyr
130 135 140

Ser Tyr Tyr His Lys Glu Ile Val Lys Tyr Leu Asn Asp Asp Ile Ala
145 150 155 160

Lys Gly Ser Ile Phe Asp Tyr Leu Glu Ser Asn Met Lys Leu Arg Ile
165 170 175

Gly Phe Ser Asp Ile Phe Phe Asn Val Asp Gln Leu Thr Ser Ser Glu
180 185 190

Ala Ser Leu Leu Gln Leu Ser Thr Gly Glu Pro Cys Leu Arg Tyr His
195 200 205

Gln Thr Phe Tyr Thr Met Thr Gly Lys Pro Phe Asp Ser Ser Asp Ile
210 215 220

Val Phe His Tyr Arg His Ala Gln Phe Tyr Ile Pro Ser Lys Lys
225 230 235

<210> 55
<211> 716
<212> DNA
<213> Homo sapiens

<400> 55
atgactgtag aatgggttagc agaacaatta aaagaacata atattcaatt aactgagact 60
caaaaacaac agtttcaaac atattatcgt ttacttggtg aatggaatga aaagatgaat 120
ttgacaagta ttacagatga acacgatgta tatttgaaac atttttatga ttccattgca 180
cctagttttt attttgattt taatcagcct ataagtatat gtgatgtagg cgctggagct 240
ggttttccaa gtattccgtt aaaaataatg tttccgcagt taaaagtgac gattgttgat 300
tcattaaata agcgtattca atttttaaac catttagcgt cagaattaca attacaggat 360
gtcagcttta tacacgatag agcagaaaca tttggtaagg gtgtctacag ggagtcttat 420
gatgttggtta ctgcaagagc agtagctaga ttatccgtgt taagtgaatt gtgtttaccg 480
ctagttaaaaa aaggtggaca gtttggttgca ttaaaatctt caaaagggtga agaagaatta 540
gaagaagcaa aatttgcaat tagtgtgta ggtggtaatg ttacagaaac acataccttt 600
gaattgccag aagatgctgg agagcgccag atgttcatta ttgataaaaa aagacagacg 660
ccgaaaaagt atccaagaaa accagggacg ctaataagac tcctttactt gaaaaa 716

<210> 56
<211> 239
<212> PRT
<213> Homo sapiens

<400> 56
Met Thr Val Glu Trp Leu Ala Glu Gln Leu Lys Glu His Asn Ile Gln
1 5 10 15

Leu Thr Glu Thr Gln Lys Gln Gln Phe Gln Thr Tyr Tyr Arg Leu Leu
20 25 30

Val Glu Trp Asn Glu Lys Met Asn Leu Thr Ser Ile Thr Asp Glu His
35 40 45

Asp Val Tyr Leu Lys His Phe Tyr Asp Ser Ile Ala Pro Ser Phe Tyr
50 55 60

Phe Asp Phe Asn Gln Pro Ile Ser Ile Cys Asp Val Gly Ala Gly Ala

<210> 58
 <211> 397
 <212> PRT
 <213> Homo sapiens

<220>
 <221> MISC FEATURE
 <222> (261)..(261)
 <223> Xaa equals any amino acid

<400> 58
 Met Ala His Thr Ile Thr Ile Val Gly Leu Gly Asn Tyr Gly Ile Asp
 1 5 10 15
 Asp Leu Pro Leu Gly Ile Tyr Lys Phe Leu Lys Thr Gln Asp Lys Val
 20 25 30
 Tyr Ala Arg Thr Leu Asp His Pro Val Ile Glu Ser Leu Gln Asp Glu
 35 40 45
 Leu Thr Phe Gln Ser Phe Asp His Val Tyr Glu Ala His Asn Gln Phe
 50 55 60
 Glu Asp Val Tyr Ile Asp Ile Val Ala Gln Leu Val Glu Ala Ala Asn
 65 70 75 80
 Glu Lys Asp Ile Val Tyr Ala Val Pro Gly His Pro Arg Val Ala Glu
 85 90 95
 Thr Thr Thr Val Lys Leu Leu Ala Leu Ala Lys Asp Asn Thr Asp Ile
 100 105 110
 Asp Val Lys Val Leu Gly Gly Lys Ser Phe Ile Asp Asp Val Phe Glu
 115 120 125
 Ala Val Asn Val Asp Pro Asn Asp Gly Phe Thr Leu Leu Asp Ala Thr
 130 135 140
 Ser Leu Gln Glu Val Thr Leu Asn Val Arg Thr His Thr Leu Ile Thr
 145 150 155 160
 Gln Val Tyr Ser Ala Met Val Ala Ala Asn Leu Lys Ile Thr Leu Met
 165 170 175
 Glu Arg Tyr Pro Asp Asp Tyr Pro Val Gln Ile Val Thr Gly Ala Arg
 180 185 190
 Ser Asp Gly Ala Asp Asn Val Val Thr Cys Pro Leu Tyr Glu Leu Asp
 195 200 205
 His Asp Glu Asn Ala Phe Asn Asn Leu Thr Ser Val Phe Val Pro Lys
 210 215 220
 Ile Ile Thr Ser Thr Tyr Leu Tyr His Asp Phe Asp Phe Ala Thr Glu
 225 230 235 240
 Val Ile Asp Thr Leu Val Asp Glu Asp Lys Gly Cys Pro Trp Asp Lys
 245 250 255
 Val Gln Thr His Xaa Thr Leu Lys Arg Tyr Leu Leu Glu Glu Thr Phe

260 265 270

Glu Leu Phe Glu Ala Ile Asp Asn Glu Asp Asp Trp His Met Ile Glu
275 280 285

Glu Leu Gly Asp Ile Leu Leu Gln Val Leu Leu His Thr Ser Ile Gly
290 295 300

Lys Lys Glu Gly Tyr Ile Asp Ile Lys Glu Val Ile Thr Ser Leu Asn
305 310 315 320

Ala Lys Met Ile Arg Arg His Pro His Ile Phe Gly Asp Ala Asn Ala
325 330 335

Glu Thr Ile Asp Asp Leu Lys Glu Ile Trp Ser Lys Ala Lys Asp Ala
340 345 350

Glu Gly Lys Gln Pro Arg Val Lys Phe Glu Lys Val Phe Ala Glu His
355 360 365

Phe Leu Asn Leu Tyr Glu Lys Thr Lys Asp Lys Ser Phe Asp Glu Ala
370 375 380

Ala Leu Lys Gln Trp Leu Glu Lys Gly Glu Ser Asn Thr
385 390 395

<210> 59
<211> 804
<212> DNA
<213> Homo sapiens

<400> 59
aatgtaaattc attctaataa aacgacaact gtgtcttctt tacttgtata tggtacatat 60
attcacgata gagaggataa gaaaatggct caaatctcta aatataaacg tgtagttttg 120
aaactaagtg gtgaagcggt agctggagaa aaaggatttg gcataaatcc agtaattatt 180
aaaagtgttg ctgagcaagt ggctgaagt gctaaaatgg actgtgaaat cgcagtaatc 240
gttgggtggcg gaaacatttg gagaggtaaa acaggtagtg acttaggtat ggaccgtgga 300
actgctgatt acatgggtat gcttgcaact gtaatgaatg ccttagcatt acaagatagt 360
ttagaacaat tggattgtga tacacgagta ttaacatcta ttgaaatgaa gcaagtggct 420
gaaccttata ttcgtcgtcg tgcaattaga cacttagaaa agaaacgcgt agttattttt 480
gctgcaggta ttggaaaccc atacttctct acagatacta cagcggcatt acgtgctgca 540
gaagtgaag cagatgttat tttaatgggc aaaaataatg tagatgggtg atattctgca 600
gatcctaaag taaacaaaga tgcggtaaaa tatgaacatt taacgcatat tcaaagtctt 660
caagaaggtt tacaagtaat ggattcaaca gcacccctcat tctgtatgga taataacatt 720
ccgttaactg ttttctctat tatggaagaa ggaaatatta aacgtgctgt tatgggtgaa 780
aagataggta cgtaattac aaaa 804

<210> 60
<211> 268
<212> PRT
<213> Homo sapiens

<400> 60
Asn Val Asn His Ser Asn Lys Thr Thr Thr Val Ser Ser Leu Leu Val
1 5 10 15
Tyr Val Thr Tyr Ile His Asp Arg Glu Asp Lys Lys Met Ala Gln Ile
20 25 30

aacatttttaa aattagtaaa tgataaatta aattacccag tctttgttaa acctgctaac 540
 ttaggggtcaa gtgtaggtat cagtaaatgt aataatgaag cggaacttaa agaaggattt 600
 aaagaagcat tccaatttga cagtaagctt gttatagaac aaggcggttaa cgcacgtgaa 660
 attgaagtag cagtttttagg aaatgactat cctgaagcga catggccagg tgaagtcgta 720
 aaagatgtcg cgtttttacga ttacaaatca aaatataaag atggtaaggt tcaattacaa 780
 attccagctg acttagacga agatgttcaa ttaacgctta gaaatatggc attagaggca 840
 ttcaaagcga cagattgttc tggtttagtc cgtgctgatt tctttgtaac agaagacaac 900
 caaatatata ttaatgaaac aaatgcaatg cctggattta cggctttcag tatgtatcca 960
 aagttatggg aaaatatggg cttatcttat ccagaattga ttacaaaact tatcgagctt 1020
 gctaaagaac gtcaccagga taaacagaaa aataaataca aaattgac 1068

<210> 62
 <211> 356
 <212> PRT
 <213> Homo sapiens

<400> 62
 Met Thr Lys Glu Asn Ile Cys Ile Val Phe Gly Gly Lys Ser Ala Glu
 1 5 10 15
 His Glu Val Ser Ile Leu Thr Ala Gln Asn Val Leu Asn Ala Ile Asp
 20 25 30
 Lys Asp Lys Tyr His Val Asp Ile Ile Tyr Ile Thr Asn Asp Gly Asp
 35 40 45
 Trp Arg Lys Gln Asn Asn Ile Thr Ala Glu Ile Lys Ser Thr Asp Glu
 50 55 60
 Leu His Leu Glu Asn Gly Glu Ala Leu Glu Ile Ser Gln Leu Leu Lys
 65 70 75 80
 Glu Ser Ser Ser Gly Gln Pro Tyr Asp Ala Val Phe Pro Leu Leu His
 85 90 95
 Gly Pro Asn Gly Glu Asp Gly Thr Ile Gln Gly Leu Phe Glu Val Leu
 100 105 110
 Asp Val Pro Tyr Val Gly Asn Gly Val Leu Ser Ala Ala Ser Ser Met
 115 120 125
 Asp Lys Leu Val Met Lys Gln Leu Phe Glu His Arg Gly Leu Pro Gln
 130 135 140
 Leu Pro Tyr Ile Ser Phe Leu Arg Ser Glu Tyr Glu Lys Tyr Glu His
 145 150 155 160
 Asn Ile Leu Lys Leu Val Asn Asp Lys Leu Asn Tyr Pro Val Phe Val
 165 170 175
 Lys Pro Ala Asn Leu Gly Ser Ser Val Gly Ile Ser Lys Cys Asn Asn
 180 185 190
 Glu Ala Glu Leu Lys Glu Gly Ile Lys Glu Ala Phe Gln Phe Asp Arg
 195 200 205
 Lys Leu Val Ile Glu Gln Gly Val Asn Ala Arg Glu Ile Glu Val Ala
 210 215 220
 Val Leu Gly Asn Asp Tyr Pro Glu Ala Thr Trp Pro Gly Glu Val Val

225 230 235 240
 Lys Asp Val Ala Phe Tyr Asp Tyr Lys Ser Lys Tyr Lys Asp Gly Lys
 245 250 255
 Val Gln Leu Gln Ile Pro Ala Asp Leu Asp Glu Asp Val Gln Leu Thr
 260 265 270
 Leu Arg Asn Met Ala Leu Glu Ala Phe Lys Ala Thr Asp Cys Ser Gly
 275 280 285
 Leu Val Arg Ala Asp Phe Phe Val Thr Glu Asp Asn Gln Ile Tyr Ile
 290 295 300
 Asn Glu Thr Asn Ala Met Pro Gly Phe Thr Ala Phe Ser Met Tyr Pro
 305 310 315 320
 Lys Leu Trp Glu Asn Met Gly Leu Ser Tyr Pro Glu Leu Ile Thr Lys
 325 330 335
 Leu Ile Glu Leu Ala Lys Glu Arg His Gln Asp Lys Gln Lys Asn Lys
 340 345 350
 Tyr Lys Ile Asp
 355

<210> 63
 <211> 861
 <212> DNA
 <213> Homo sapiens

<400> 63
 atgacgaatc taccgatgaa taaattaata gatgaagtca ataatgaatt atcggttgcg 60
 ataaataaat cagtaatgga tactcagcta gaagaaagta tgttgatttc attaaatgct 120
 ggaggtaaac gcatccgacc agttctgtta ttactcactt tagattcact aaataccgag 180
 tatgagttag gtatgaagag cgcaattgca ctagaaatga ttcatacata ttcacttatt 240
 catgatgacc taccagcgat ggataatgat gattatcgac gaggaaaatt aacaaatcat 300
 aaagtatatg gtgagtggac tgcgataatta gcaggtgatg ctttattaac taaagcattt 360
 gaacttattt caagtgatga tagattaact gatgaagtaa aaataaaaagt tctacaacgg 420
 ctgtcaatag caagtggatg tgttgaatg gtcggcggtc aaatgttaga tatgcaaagc 480
 gaaggccaac caattgatct tgaacttttg gaaatgatac acaaaacaaa aacaggagca 540
 ttattaactt ttgcggttat gagtgcagca gatatcgcta atgtcgatga tacaactaaa 600
 gaacatttag aaagttatag ttatcattta ggtatgatgt tccagattaa agatgattta 660
 ttagactgct atggtgatga agcaaagtta ggtaaaaaag tgggcagcga tcttgaaaat 720
 aataaaaagta cgtacgtgag tttattaggg aaagatggcg cagaagataa attgacttat 780
 catagagacg cagcagtgga tgaactaacg caaattgatg aacaattcaa taaaaaacac 840
 ttattagaaa tcgttgattt a 861

<210> 64
 <211> 287
 <212> PRT
 <213> Homo sapiens

<400> 64
 Met Thr Asn Leu Pro Met Asn Lys Leu Ile Asp Glu Val Asn Asn Glu
 1 5 10 15
 Leu Ser Val Ala Ile Asn Lys Ser Val Met Asp Thr Gln Leu Glu Glu
 20 25 30

Ser Met Leu Tyr Ser Leu Asn Ala Gly Gly Lys Arg Ile Arg Pro Val
35 40 45

Leu Leu Leu Leu Thr Leu Asp Ser Leu Asn Thr Glu Tyr Glu Leu Gly
50 55 60

Met Lys Ser Ala Ile Ala Leu Glu Met Ile His Thr Tyr Ser Leu Ile
65 70 75 80

His Asp Asp Leu Pro Ala Met Asp Asn Asp Asp Tyr Arg Arg Gly Lys
85 90 95

Leu Thr Asn His Lys Val Tyr Gly Glu Trp Thr Ala Ile Leu Ala Gly
100 105 110

Asp Ala Leu Leu Thr Lys Ala Phe Glu Leu Ile Ser Ser Asp Asp Arg
115 120 125

Leu Thr Asp Glu Val Lys Ile Lys Val Leu Gln Arg Leu Ser Ile Ala
130 135 140

Ser Gly His Val Gly Met Val Gly Gly Gln Met Leu Asp Met Gln Ser
145 150 155 160

Glu Gly Gln Pro Ile Asp Leu Glu Thr Leu Glu Met Ile His Lys Thr
165 170 175

Lys Thr Gly Ala Leu Leu Thr Phe Ala Val Met Ser Ala Ala Asp Ile
180 185 190

Ala Asn Val Asp Asp Thr Thr Lys Glu His Leu Glu Ser Tyr Ser Tyr
195 200 205

His Leu Gly Met Met Phe Gln Ile Lys Asp Asp Leu Leu Asp Cys Tyr
210 215 220

Gly Asp Glu Ala Lys Leu Gly Lys Lys Val Gly Ser Asp Leu Glu Asn
225 230 235 240

Asn Lys Ser Thr Tyr Val Ser Leu Leu Gly Lys Asp Gly Ala Glu Asp
245 250 255

Lys Leu Thr Tyr His Arg Asp Ala Ala Val Asp Glu Leu Thr Gln Ile
260 265 270

Asp Glu Gln Phe Asn Thr Lys His Leu Leu Glu Ile Val Asp Leu
275 280 285

<210> 65
<211> 819
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (811)..(811)
<223> n equals a, t, g, or c

<400> 65
 tttgttattc tgagtagcca atttggcaaa gatgaacaaa cgtctgaaca aacgtatcaa 60
 gttgcagtcg cattagagtt aattcatatg gcaacacttg ttcgatga cgttattgat 120
 aaaagcgaca agcgctcgagg caagttaacc atatcaaaga aatgggatca gacaactgct 180
 attttaactg ggaatttttt attggcatta ggacttgaac acttaatggc cgttaaagat 240
 aatcgtgtac atcaattgat atctgaatct atcgttgatg tttgtagagg ggaacttttc 300
 caatttcaag accaatttaa cagtcaacag acaattatta attatttacg acgtatcaat 360
 cgcaaaacag cactgttaat tcaaatatca actgaagttg gtgcaattac ttctcaatct 420
 gataaagaga ctgtacgaaa attgaaaatg attggtcatt atataggtat gagcttccaa 480
 atcattgatg atgtattaga cttcacaagt accgaaaaga aattaggtaa gccggtcgga 540
 agtgatttgc ttaatggtca tattacgtta ccgattttat tagaaatgcg taaaaatcca 600
 gacttcaaat tgaaaatcga acagttacgt cgtgatagtg aacgcaaaga atttgaagaa 660
 tgtatccaaa tcattagaaa atctgacagc atcgatgagg ctaaggcagt aagttcgaag 720
 tatttaagta aagcyttgaa tttgatttcy gagttaccag atggacatcc gagatcacta 780
 cytttaagtt tgacgaaaaa aatgggttca anaaacacg 819

<210> 66
 <211> 273
 <212> PRT
 <213> Homo sapiens

<220>
 <221> MISC_FEATURE
 <222> (261)..(261)
 <223> Xaa equals any amino acid

<220>
 <221> MISC_FEATURE
 <222> (271)..(271)
 <223> Xaa equals any amino acid

<400> 66
 Phe Val Ile Leu Ser Ser Gln Phe Gly Lys Asp Glu Gln Thr Ser Glu
 1 5 10 15
 Gln Thr Tyr Gln Val Ala Val Ala Leu Glu Leu Ile His Met Ala Thr
 20 25 30
 Leu Val His Asp Asp Val Ile Asp Lys Ser Asp Lys Arg Arg Gly Lys
 35 40 45
 Leu Thr Ile Ser Lys Lys Trp Asp Gln Thr Thr Ala Ile Leu Thr Gly
 50 55 60
 Asn Phe Leu Leu Ala Leu Gly Leu Glu His Leu Met Ala Val Lys Asp
 65 70 75 80
 Asn Arg Val His Gln Leu Ile Ser Glu Ser Ile Val Asp Val Cys Arg
 85 90 95
 Gly Glu Leu Phe Gln Phe Gln Asp Gln Phe Asn Ser Gln Gln Thr Ile
 100 105 110
 Ile Asn Tyr Leu Arg Arg Ile Asn Arg Lys Thr Ala Leu Leu Ile Gln
 115 120 125
 Ile Ser Thr Glu Val Gly Ala Ile Thr Ser Gln Ser Asp Lys Glu Thr
 130 135 140

Val Arg Lys Leu Lys Met Ile Gly His Tyr Ile Gly Met Ser Phe Gln
145 150 155 160

Ile Ile Asp Asp Val Leu Asp Phe Thr Ser Thr Glu Lys Lys Leu Gly
165 170 175

Lys Pro Val Gly Ser Asp Leu Leu Asn Gly His Ile Thr Leu Pro Ile
180 185 190

Leu Leu Glu Met Arg Lys Asn Pro Asp Phe Lys Leu Lys Ile Glu Gln
195 200 205

Leu Arg Arg Asp Ser Glu Arg Lys Glu Phe Glu Glu Cys Ile Gln Ile
210 215 220

Ile Arg Lys Ser Asp Ser Ile Asp Glu Ala Lys Ala Val Ser Ser Lys
225 230 235 240

Tyr Leu Ser Lys Ala Leu Asn Leu Ile Ser Glu Leu Pro Asp Gly His
245 250 255

Pro Arg Ser Leu Xaa Leu Ser Leu Thr Lys Lys Met Gly Ser Xaa Asn
260 265 270

Thr

<210> 67
<211> 504
<212> DNA
<213> Homo sapiens

<400> 67
gtaaattata ttatgaattt gcctgtcaat ttcttaaaga cattcttacc ggaactaatt 60
gaaaaaaatg tcaaagttga aacaattgga tttactgata agttgccaaa atcaacgata 120
gaagcaatta ataatgcyma agaaaagaca gctaataata ccggcttaaa attaataatt 180
gcaattaatt atggtggcag agcagaactt gttcatagta ttaaaaatat gtttgacgag 240
cttcatcaac aagggtttaa tagtgatata atagatgaaa catatataaa caatcattta 300
atgacaaaag actatcctga tccagagttg ttaattcgta cttcaggaga acaaagaata 360
agtaatttct tgatttggca agtttcgtat agtgaattta tctttaatca aaaattatgg 420
cctgactttg acgaagatga attaattaaa tgtataaaaa tttatcagtc acgtcaaaga 480
cgctttggcg gattgagtga ggag 504

<210> 68
<211> 168
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<222> (47)..(47)
<223> Xaa equals any amino acid

<400> 68
Val Asn Tyr Ile Met Asn Leu Pro Val Asn Phe Leu Lys Thr Phe Leu
1 5 10 15

Pro Glu Leu Ile Glu Lys Asn Val Lys Val Glu Thr Ile Gly Phe Thr
20 25 30

Asp Lys Leu Pro Lys Ser Thr Ile Glu Ala Ile Asn Asn Ala Xaa Glu
 35 40 45
 Lys Thr Ala Asn Asn Thr Gly Leu Lys Leu Ile Phe Ala Ile Asn Tyr
 50 55 60
 Gly Gly Arg Ala Glu Leu Val His Ser Ile Lys Asn Met Phe Asp Glu
 65 70 75 80
 Leu His Gln Gln Gly Leu Asn Ser Asp Ile Ile Asp Glu Thr Tyr Ile
 85 90 95
 Asn Asn His Leu Met Thr Lys Asp Tyr Pro Asp Pro Glu Leu Leu Ile
 100 105 110
 Arg Thr Ser Gly Glu Gln Arg Ile Ser Asn Phe Leu Ile Trp Gln Val
 115 120 125
 Ser Tyr Ser Glu Phe Ile Phe Asn Gln Lys Leu Trp Pro Asp Phe Asp
 130 135 140
 Glu Asp Glu Leu Ile Lys Cys Ile Lys Ile Tyr Gln Ser Arg Gln Arg
 145 150 155 160
 Arg Phe Gly Gly Leu Ser Glu Glu
 165

<210> 69
 <211> 1823
 <212> DNA
 <213> Homo sapiens

<400> 69
 atgaagtggc taaaacaact acaatccctt cataactaaat ttgtaattgt ttatgtatta 60
 ctgattatca ttggtatgca aattatcggg ttatatattta caaataacct tgaaaaagag 120
 ctgcttgata attttaagaa gaattattacg cagtacgcga aacaattaga aattagtatt 180
 gaaaaagtat atgacgaaaa gggctccgta aatgcacaaa aagatattca aaatttatta 240
 agtgagtatg ccaaccgtca agaaattgga gaaattcgtt ttatagataa agaccaaatt 300
 attattgcga cgacgaagca gtctaaccgt agtctaataca atcaaaaagc gaatgatagt 360
 tctgtccaaa aagcactatc actaggacaa tcaaacgatc atttaatttt aaaagattat 420
 ggcgggtggta aggaccgtgt ctgggtatat aatatcccag ttaaagtcga taaaagggtg 480
 attggtaata tttatatcga atcaaaaatt aatgacgttt ataaccaatt aaataatata 540
 aatcaaatat tcattgttgg tacagctatt tcattattaa tcacagtcac cctaggattc 600
 tttatagcgc gaacgattac caaaccaatc accgatatgc gtaaccagac ggtcgaaatg 660
 tccagaggta actatacgca acgtgtgaag atttatggta atgatgaaat tggcgaatta 720
 gcttttagcat ttaataactt gtctaaacgt gtacaagaag cgcaggctaa tactgaaagt 780
 gagaaacgta gactggactc agttatcacc catatgagtg atggtattat tgcaacagac 840
 cgccgtggac gtattcgtat cgtcaatgat atggcactca agatgcttgg tatggcgaaa 900
 gaagacatca tcggatatta catgttaagt gtattaagtc ttgaagatga atttaactg 960
 gaagaaattc aagagaataa tgatagtttc ttattagatt taaatgaaga agaagggtcta 1020
 atcgacgtg ttaactttag tacgattgtg caggaaacag gatttgtaac tgggttatatc 1080
 gctgtgttac atgacgtaac tgaacaacaa caagttgaac gtgagcgtcg tgaatttggtt 1140
 gccaatgtat cacatgagtt acgtacacct ttaacttcta tgaatagtta cattgaagca 1200
 cttgaagaag gtgcatggaa agatgaggaa cttgcgccac aatttttatc tgttaccgt 1260
 gaagaaacag aacgaatgat tcgactggtc aatgacttgc tacagttatc taaaatggat 1320
 aatgagtctg atcaaatcaa caaagaaatt acgactttta catgttcatt aataaaatta 1380
 ttaatcgaca tgaaatgtct gcgaaagata caacatttat tcgagatatt ccgaaaaaga 1440
 cgattttcac agaatttgat cctgataaaa tgacgcaagt atttgataat gtcattacaa 1500
 atgcgatgaa atattctaga ggcgataaac gtgtcgagtt ccacgtgaaa caaatccac 1560

tttataatcg aatgacgatt cgtattaaag ataatggcat tggatttcct atcaataaag 1620
 tcgataagat attcgaccga ttctatcgtg tagataaggc acgtacgcgt aaaatgggtg 1680
 gtactggatt aggactagcc atttcgaaag agattgtgga agcgcacaat ggtcgtattt 1740
 gggcaaacag tgtagaaggt caaggtacat ctatctttat cacacttcca tgtgaagtca 1800
 ttgaagacgg tgattgggat gaa 1823

<210> 70

<211> 608

<212> PRT

<213> Homo sapiens

<400> 70

Met Lys Trp Leu Lys Gln Leu Gln Ser Leu His Thr Lys Phe Val Ile
 1 5 10 15

Val Tyr Val Leu Leu Ile Ile Ile Gly Met Gln Ile Ile Gly Leu Tyr
 20 25 30

Phe Thr Asn Asn Leu Glu Lys Glu Leu Leu Asp Asn Phe Lys Lys Asn
 35 40 45

Ile Thr Gln Tyr Ala Lys Gln Leu Glu Ile Ser Ile Glu Lys Val Tyr
 50 55 60

Asp Glu Lys Gly Ser Val Asn Ala Gln Lys Asp Ile Gln Asn Leu Leu
 65 70 75 80

Ser Glu Tyr Ala Asn Arg Gln Glu Ile Gly Glu Ile Arg Phe Ile Asp
 85 90 95

Lys Asp Gln Ile Ile Ile Ala Thr Thr Lys Gln Ser Asn Arg Ser Leu
 100 105 110

Ile Asn Gln Lys Ala Asn Asp Ser Ser Val Gln Lys Ala Leu Ser Leu
 115 120 125

Gly Gln Ser Asn Asp His Leu Ile Leu Lys Asp Tyr Gly Gly Gly Lys
 130 135 140

Asp Arg Val Trp Val Tyr Asn Ile Pro Val Lys Val Asp Lys Lys Val
 145 150 155 160

Ile Gly Asn Ile Tyr Ile Glu Ser Lys Ile Asn Asp Val Tyr Asn Gln
 165 170 175

Leu Asn Asn Ile Asn Gln Ile Phe Ile Val Gly Thr Ala Ile Ser Leu
 180 185 190

Leu Ile Thr Val Ile Leu Gly Phe Phe Ile Ala Arg Thr Ile Thr Lys
 195 200 205

Pro Ile Thr Asp Met Arg Asn Gln Thr Val Glu Met Ser Arg Gly Asn
 210 215 220

Tyr Thr Gln Arg Val Lys Ile Tyr Gly Asn Asp Glu Ile Gly Glu Leu
 225 230 235 240

Ala Leu Ala Phe Asn Asn Leu Ser Lys Arg Val Gln Glu Ala Gln Ala
 245 250 255

Asn	Thr	Glu	Ser	Glu	Lys	Arg	Arg	Leu	Asp	Ser	Val	Ile	Thr	His	Met	260	265	270
Ser	Asp	Gly	Ile	Ile	Ala	Thr	Asp	Arg	Arg	Gly	Arg	Ile	Arg	Ile	Val	275	280	285
Asn	Asp	Met	Ala	Leu	Lys	Met	Leu	Gly	Met	Ala	Lys	Glu	Asp	Ile	Ile	290	295	300
Gly	Tyr	Tyr	Met	Leu	Ser	Val	Leu	Ser	Leu	Glu	Asp	Glu	Phe	Lys	Leu	305	310	315
Glu	Glu	Ile	Gln	Glu	Asn	Asn	Asp	Ser	Phe	Leu	Leu	Asp	Leu	Asn	Glu	325	330	335
Glu	Glu	Gly	Leu	Ile	Ala	Arg	Val	Asn	Phe	Ser	Thr	Ile	Val	Gln	Glu	340	345	350
Thr	Gly	Phe	Val	Thr	Gly	Tyr	Ile	Ala	Val	Leu	His	Asp	Val	Thr	Glu	355	360	365
Gln	Gln	Gln	Val	Glu	Arg	Glu	Arg	Arg	Glu	Phe	Val	Ala	Asn	Val	Ser	370	375	380
His	Glu	Leu	Arg	Thr	Pro	Leu	Thr	Ser	Met	Asn	Ser	Tyr	Ile	Glu	Ala	385	390	395
Leu	Glu	Glu	Gly	Ala	Trp	Lys	Asp	Glu	Glu	Leu	Ala	Pro	Gln	Phe	Leu	405	410	415
Ser	Val	Thr	Arg	Glu	Glu	Thr	Glu	Arg	Met	Ile	Arg	Leu	Val	Asn	Asp	420	425	430
Leu	Leu	Gln	Leu	Ser	Lys	Met	Asp	Asn	Glu	Ser	Asp	Gln	Ile	Asn	Lys	435	440	445
Glu	Ile	Ile	Asp	Phe	Asn	Met	Phe	Ile	Asn	Lys	Ile	Ile	Asn	Arg	His	450	455	460
Glu	Met	Ser	Ala	Lys	Asp	Thr	Thr	Phe	Ile	Arg	Asp	Ile	Pro	Lys	Lys	465	470	475
Thr	Ile	Phe	Thr	Glu	Phe	Asp	Pro	Asp	Lys	Met	Thr	Gln	Val	Phe	Asp	485	490	495
Asn	Val	Ile	Thr	Asn	Ala	Met	Lys	Tyr	Ser	Arg	Gly	Asp	Lys	Arg	Val	500	505	510
Glu	Phe	His	Val	Lys	Gln	Asn	Pro	Leu	Tyr	Asn	Arg	Met	Thr	Ile	Arg	515	520	525
Ile	Lys	Asp	Asn	Gly	Ile	Gly	Ile	Pro	Ile	Asn	Lys	Val	Asp	Lys	Ile	530	535	540
Phe	Asp	Arg	Phe	Tyr	Arg	Val	Asp	Lys	Ala	Arg	Thr	Arg	Lys	Met	Gly	545	550	555
Gly	Thr	Gly	Leu	Gly	Leu	Ala	Ile	Ser	Lys	Glu	Ile	Val	Glu	Ala	His	565	570	575

Asn Gly Arg Ile Trp Ala Asn Ser Val Glu Gly Gln Gly Thr Ser Ile
580 585 590

Phe Ile Thr Leu Pro Cys Glu Val Ile Glu Asp Gly Asp Trp Asp Glu
595 600 605

<210> 71
<211> 2232
<212> DNA
<213> Homo sapiens

<400> 71
atggcggaagc aaaaaattaa aattaaaaaa aataaaatag gggcagtcct acttggttgg 60
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cattctaattg gtcaagattt agtcatgaag gcaaataaaa agtatttagt taagaatgca 180
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08967-0101

51

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 340 345 350
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 Met Lys Ser Trp Tyr Glu Arg Phe Gly Phe Gly Lys Ser Thr Lys Gly
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 Gln Gln Lys Thr Ser Ser Phe Gly Gln Ser Thr Thr Val Thr Pro Val
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 Phe Tyr Lys Gly Gln Lys Gln Ile Ala Gly Lys Pro Ile Thr Lys Asp
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 Thr Ala Glu Lys Val Glu Lys Gln Leu Asp Leu Val Val Asn Ser Lys
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 Lys Ser His Ala Ala Asn Tyr Arg Ile Asp Gly Tyr Glu Val Glu Gly
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 Lys Thr Gly Thr Ala Gln Val Ala Ala Pro Asn Gly Gly Gly Tyr Val
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 Lys Gly Pro Asn Pro Tyr Phe Val Ser Phe Met Gly Asp Ala Pro Lys
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<212> PRT
<213> Homo sapiens

<400> 74

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Ala	Pro	Thr	Arg	Glu	Leu	Ala	Met	Gln	Val	Ala	Glu	Gln	Leu	Arg	Glu
			100					105					110		
Phe	Ser	Arg	Gly	Gln	Gly	Val	Gln	Val	Val	Thr	Val	Phe	Gly	Gly	Met
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Val	Gly	Thr	Pro	Gly	Arg	Val	Ile	Asp	His	Leu	Asn	Arg	Arg	Thr	Leu
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Thr	Ile	Val	Lys	Glu	Leu	Glu	Lys	Phe	Asp	Thr	Phe	Thr	Asn	Phe	Leu
			245						250					255	
Asp	Val	His	Gln	Pro	Glu	Leu	Ala	Ile	Val	Phe	Gly	Arg	Thr	Lys	Arg
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Arg	Val	Asp	Glu	Leu	Thr	Ser	Ala	Leu	Ile	Ser	Lys	Gly	Tyr	Lys	Ala
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Glu	Gly	Leu	His	Gly	Asp	Ile	Thr	Gln	Ala	Lys	Arg	Leu	Glu	Val	Leu
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Lys 305	Lys	Phe	Lys	Asn 310	Asp	Gln	Ile	Asn	Ile	Leu 315	Val	Ala	Thr	Asp	Val 320
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Val	Asp 435	Leu	Val	Ala	Ala	Leu	Leu 440	Gln	Glu	Leu	Val	Glu 445	Ala	Asn	Asp
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Arg 465	Asn	Gly	Lys	Pro	Ser 470	Gly	Ser	Arg	Asn 475	Arg	Asn	Ser	Lys	Arg	Gly 480
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Lys	Lys	Lys	Ser 500	Thr	Lys	Lys	Phe	Asp 505	Arg	Lys	Glu	Lys	Ser 510	Ser	Gly
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